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USPT	((438/29 438/34)!.CCLS.)	287	<u>L1</u>

DWPI

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TITLE: Transistor substrate for liquid crystal display - comprises transistor, over substrate, having gate, source, drain, semiconductor layer and gate insulation layer, and protection film, over transistor, including specific material

INVENTOR: KIM, J; KIM, W ; LEE, H ; LIM, K ; LYU, K ; PARK, S ; KIM, J H ; KIM,

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; RYOO, G H

PATENT-ASSIGNEE: LG ELECTRONICS INC[GLDS], KINSEISHA KK[GLDS], LG PHILIPS LCD CO LTD[GLDS]

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PUB-NO	PUB-DATE	LANGUAGE	PAGES	
MAIN-IPC				
KR 232682 B1	December 1, 1999	N/A	000	G02F
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GB 2311653 A	October 1, 1997	N/A	083	G02F
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FR 2746961 A1	October 3, 1997	N/A	065	H01L
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DE 19712233 A1	October 30, 1997	N/A	052	H01L
029/786				
JP 10041519 A	February 13, 1998	N/A	027	H01L
029/786				
KR 97066694 A	October 13, 1997	N/A	000	G02F
001/136				
KR 98003740 A	March 30, 1998	N/A	000	G02F
001/136				
KR 98003743 A	March 30, 1998	N/A	000	G02F
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KR 98003744 A	March 30, 1998	N/A	000	G02F
001/136				
KR 98003745 A	March 30, 1998	N/A	000	G02F
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GB 2311653 B	August 4, 1999	N/A	000	G02F
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US 6100954 A	August 8, 2000	N/A	000	G02F
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KR 229609 B1	November 15, 1999	N/A	000	
KR 229612 B1	November 15, 1999	N/A	000	G02F
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KR 232682B1	N/A	1996KR-0023448	June 25,
1996			

GB 2311653A 1997	N/A	1997GB-0006354	March 26,
FR 2746961A1 1997	N/A	1997FR-0003615	March 25,
DE 19712233A1 1997	N/A	1997DE-1012233	March 24,
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KR 97066694A 1997	N/A	1997KR-0009366	March 19,
KR 98003740A 1996	N/A	1996KR-0022404	June 19,
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KR 98003744A 1996	N/A	1996KR-0023296	June 24,
KR 98003745A 1996	N/A	1996KR-0023448	June 25,
GB 2311653B 1997	N/A	1997GB-0006354	March 26,
US 6100954A 1997	N/A	1997US-0826804	March 25,
KR 229609B1 1996	N/A	1996KR-0023296	June 24,
KR 229612B1 1996	N/A	1996KR-0023295	June 24,
KR 232681B1 1996	N/A	1996KR-0022404	June 19,

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ABSTRACTED-PUB-NO: GB 2311653A

BASIC-ABSTRACT: A transistor substrate for a liquid crystal display (LCD) comprises: (a) a substrate (111); (b) a transistor, over the substrate, having a gate (113), a source (121, 123), a drain (121, 127), a semiconductor layer (119) and a gate insulation layer (157); and (c) a protection film (159), over the transistor, including a material derived from fluorinated polyimide, Teflon

(RTM), Cytop (RTM), fluoro polyaryl ether, fluorinated para-xylene, perfluoro cyclobutane (PFCB) or benzocyclobutene (BCB).

Also claimed are: (i) a transistor substrate as above in which the gate insulation layer (157) includes a material derived from fluorinated polyimide, Teflon (RTM), Cytop (RTM), fluoro polyaryl ether, fluorinated para-xylene, PFCB

or BCB; (ii) a method for manufacturing the transistor substrate which comprises forming the transistor over the substrate (111) and forming the protection film (159) over the transistor; (iii) a semiconductor device insulating layer as above; (iv) a semiconductor switching device for a LCD where the gate insulation layer and/or the protection layer comprise an insulating layer as above; (v) a thin film transistor for a LCD, where the gate insulation layer and/or the protection layer comprise an insulating layer as above; and (vi) a method of manufacturing a semiconductor device which comprises spin coating an insulating layer as above.

ADVANTAGE - The LCD does not have a stepped profile due to a multilayered structure. It has less parasitic capacitance and is free from electron trap and poor adhesion at the interface between the insulation and semiconductor layers. The gate insulation layer has a smooth surface which prevents problems such as line disconnection and/or short circuit. Even though the gate

insulation layer is thin, it has sufficient insulation property. The application of an organic film on the gate electrode does not affect the function of a thin film transistor. This is because the thickness of the organic film is reduced to compensate the low dielectric constant of the organic film. Due to the low dielectric constant of the organic material, spaces or gaps between pixel electrodes and gate and signal bus lines are not required. Consequently, it is possible to form a wider pixel electrode than in conventional methods. This yields an improved aperture ratio and high quality contrast can be achieved.

ABSTRACTED-PUB-NO: GB 2311653B

EQUIVALENT-ABSTRACTS: A transistor substrate for a liquid crystal display (LCD)

comprises: (a) a substrate (111); (b) a transistor, over the substrate, having a gate (113), a source (121, 123), a drain (121, 127), a semiconductor layer (119) and a gate insulation layer (157); and (c) a protection film (159), over the transistor, including a material derived from fluorinated polyimide, Teflon

(RTM), Cytop (RTM), fluoro polyaryl ether, fluorinated para-xylene, perfluoro cyclobutane (PFCB) or benzocyclobutene (BCB).

Also claimed are: (i) a transistor substrate as above in which the gate insulation layer (157) includes a material derived from fluorinated polyimide, Teflon (RTM), Cytop (RTM), fluoro polyaryl ether, fluorinated para-xylene, PFCB

or BCB; (ii) a method for manufacturing the transistor substrate which comprises forming the transistor over the substrate (111) and forming the protection film (159) over the transistor; (iii) a semiconductor device insulating layer as above; (iv) a semiconductor switching device for a LCD where the gate insulation layer and/or the protection layer comprise an insulating layer as above; (v) a thin film transistor for a LCD, where the gate

insulation layer and/or the protection layer comprise an insulating layer as above; and (vi) a method of manufacturing a semiconductor device which comprises spin coating an insulating layer as above.

ADVANTAGE - The LCD does not have a stepped profile due to a multilayered structure. It has less parasitic capacitance and is free from electron trap and poor adhesion at the interface between the insulation and semiconductor layers. The gate insulation layer has a smooth surface which prevents problems

such as line disconnection and/or short circuit. Even though the gate insulation layer is thin, it has sufficient insulation property. The application of an organic film on the gate electrode does not affect the function of a thin film transistor. This is because the thickness of the organic film is reduced to compensate the low dielectric constant of the organic film. Due to the low dielectric constant of the organic material, spaces or gaps between pixel electrodes and gate and signal bus lines are not required. Consequently, it is possible to form a wider pixel electrode than in conventional methods. This yields an improved aperture ratio and high quality contrast can be achieved.

US 6100954A

A transistor substrate for a liquid crystal display (LCD) comprises: (a) a substrate (111); (b) a transistor, over the substrate, having a gate (113), a source (121, 123), a drain (121, 127), a semiconductor layer (119) and a gate insulation layer (157); and (c) a protection film (159), over the transistor, including a material derived from fluorinated polyimide, Teflon (RTM), Cytop

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ADVANTAGE - The LCD does not have a stepped profile due to a multilayered structure. It has less parasitic capacitance and is free from electron trap and poor adhesion at the interface between the insulation and semiconductor layers. The gate insulation layer has a smooth surface which prevents problems

such as line disconnection and/or short circuit. Even though the gate insulation layer is thin, it has sufficient insulation property. The application of an organic film on the gate electrode does not affect the function of a thin film transistor. This is because the thickness of the organic film is reduced to compensate the low dielectric constant of the organic film. Due to the low dielectric constant of the organic material, spaces or gaps between pixel electrodes and gate and signal bus lines are not required. Consequently, it is possible to form a wider pixel electrode than in conventional methods. This yields an improved aperture ratio and high quality contrast can be achieved.

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